2025 FRANKLIN LAKE COMPREHENSIVE SURVEY REPORT

FOREST COUNTY

INTRODUCTION AND SURVEY OBJECTIVES

The Wisconsin Department of Natural Resources, in collaboration with the U.S. Forest Service and Mole Lake Fisheries, conducted a comprehensive survey of Franklin Lake, Forest County, to analyze the health of its fishery. A comprehensive survey includes surveys designed to assess all major fish populations within the lake; for species-specific survey details, see table 1 below. The summary that follows will detail the current state of the fishery, as well as changes observed in the fishery since previous assessments. Franklin Lake is located approximately 10 miles East of Eagle River. There is a public boat launch provided for a small fee by the U.S. Forest Service off of Butternut Lake Road.

Franklin Lake is an 839-acre lake with a maximum depth of 46 feet and 6.6 miles of shoreline not including islands. Wisconsin DNR considers Franklin Lake a drainage lake within the Complex-Two Story lake class. Franklin Lake has two special regulations, only largemouth or smallmouth bass less than 14 inches may be kept, except one fish may be over 18 inches, and walleye must be at least 18 inches. All other regulations are standard. Franklin Lake is within the ceded territory.

Picture 1. An ariel view of Franklin Lake.

Table 1. A summary of all effort conducted on Franklin Lake in 2025 during the comprehensive survey.

Survey Information				
Species	**Survey Date(s)**	**Gear Used**	**Effort**	**Water Temp. (°F)**
Walleye, Northern Pike, Yellow Perch, White Sucker	4/24-4/29/2025	Fyke Net	49 Net-Nights	39-44
Walleye (Recapture)	4/29/2025	Boomshocker	9.65 Miles	44-46
Smallmouth Bass	5/7, 5/15, 5/20, 5/21 and 5/27/2025	Boomshocker	47.43 Miles	53-65
Bluegill, Pumpkinseed, Lepomis Hybrids, Rock Bass	6/16-6/18/2025	Fyke Net	12 Net-Nights	69-71
Lake Whitefish	8/4-8/5/2025	Vertical Gill Net	2 Net-Nights	Unknown
Juvenile Gamefish	9/18/2025	Boomshocker	7.52 Miles	67
Lake Whitefish	11/17/2025	Boomshocker	4.2 Miles	36-40

Fish Metric Descriptions

Population estimate (PE) is estimated by marking a portion of the population, then capturing another sample of fish and using the ratio of new fish to previously marked fish to estimate the number of fish in the population.

Catch per unit effort (CPUE) is the number of fish per mile (electrofishing) or per net-night (netting) and is used to index abundance when we are unable to get a PE.

Relative stock density (RSD) is an index used to describe the size structure of fish populations. It is calculated by dividing the number of fish larger than a certain length by the number of stock size fish for a given species. Stock size is a length set for each species and is used to offset potential large year classes of juvenile fish.

Length frequency distribution (LFD) is a graphical representation of the number of fish captured by inch group. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Survey Methods

Surveys are designed to evaluate each species when they are particularly vulnerable to our gear.

Standard fyke nets and electrofishing gear is used to capture fish.

Data is collected from the target species of each survey to gather population metrics.

Fish metrics are compared to previous surveys of this water and the mean/median values for waters in this “area” (Florence and Forest Counties), as well as the DNR lake classification.

Data collected is used to monitor the fishery, determine if stocking is necessary, evaluate fishing regulations, and determine how to improve the fishery.

Gear Used During This Survey

Fyke Nets are set in areas where we anticipate fish to congregate. Fish traveling along the shoreline will be met by a “lead,” which is similar to a fence. The lead directs the fish toward the trap end of the net. Fish travel through a series of funnels and eventually become trapped. Fish are then removed from the net and placed in holding tanks to gather data before being returned to the lake.

Picture 2. A picture of two DNR employees in a work boat with the employee on the bow securing the back of a round hooped net being lifted out of the water to the bow with ropes. The front of the net is squared and the top sticks slightly out of the water. A line of buoys from the lead can be seen running from the shoreline to the front of the net.

A boomshocker is a specially designed boat that creates an electric current in the water immediately in front of the boat. The boat is driven along the shoreline and shallow areas of the lake. When the boat encounters fish, they are momentarily stunned. Once the fish is stunned, they can be netted out of the lake and placed in a holding tank. After data is collected, the fish are returned to the lake.

Picture 3. A picture of three DNR employees in a work boat with railings on the gunnels and bow. A metal tub can be seen in front of the console at which the driver is standing. Two employees stand on the front of the boat holding long dip nets. Two orange booms extend in front of the boat with anodes dropping in to the water. Lights shine off the front of the boat pointed toward the water.

WALLEYE

In 2025 a mark-recapture survey was conducted to estimate the abundance of adult walleye in Franklin Lake. Fyke nets were set on 4/23/2025 as ice was receding from the lake and fished until 4/29/2025, capturing a total of 331 different adult walleye which were marked with an identifiable fin clip. On the night of 4/29/2025, an electrofishing survey was conducted along the entire shoreline of the lake capturing 50 adult walleye. Of these fish, 38 had been previously captured in the netting survey. Based on this data, we estimate the adult walleye population of Franklin Lake to be 414 fish (0.46/acre). Adult walleye abundance has decreased since the last WDNR comprehensive survey in 2014 (0.77/acre). Historical adult walleye abundance can be seen in the figure below (Figure 1). Franklin Lake is considered to have a low density walleye population and is well below the area average of 1.57 adults/acre. During the survey walleye were captured at a rate of 9.78 fish/net-night, which is well above the median for its lake class (6.59 fish/net-night) indicating high relative abundance. Catch rates may be higher due to concentrations of fish in spawning areas where nets were set at this time, as the population estimate suggests low density. Nets specifically targeting walleye captured walleye at a rate of 20.09 fish/net-night, which is above the 90th percentile for complex-two story lakes.

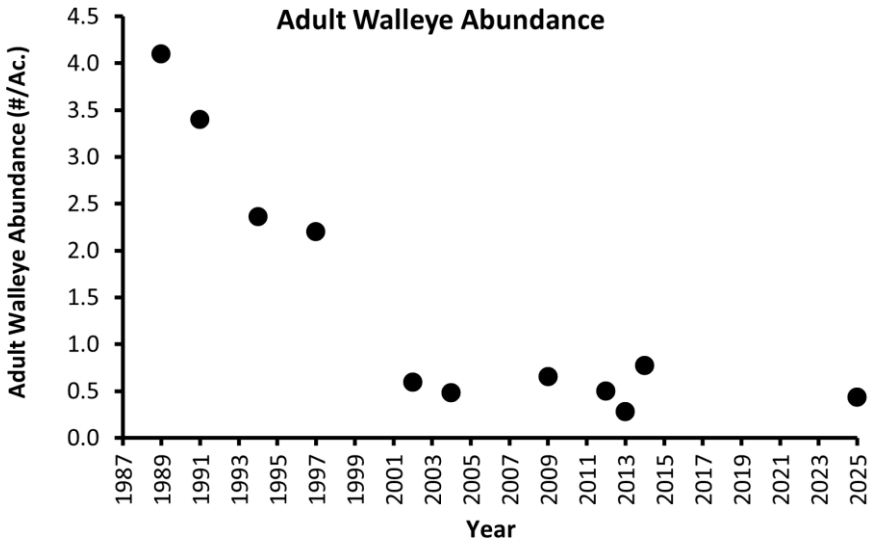


Figure 1. A plot of adult walleye abundance over time in Franklin Lake, Forest County, Wisconsin.

All walleye captured during the mark-recapture survey, a total of 380 fish, were measured and used for size structure analysis. After removing all fish less than 10 inches from analysis, 78.7% of the sample was larger than the minimum size limit of ≥

18 inches, and 22.5% were ≥ 24 inches. Walleye size structure has increased since 2014, when 30.4% of the walleye were ≥ 18 inches and 7.6% were ≥ 24 inches. The walleye population in Franklin Lake has well above average size structure for the area, with area averages of 58.7% and 10.5% being ≥ 18 and 24 inches, respectively. A length frequency figure of the walleye caught in 2025 can be seen below (Figure 2).

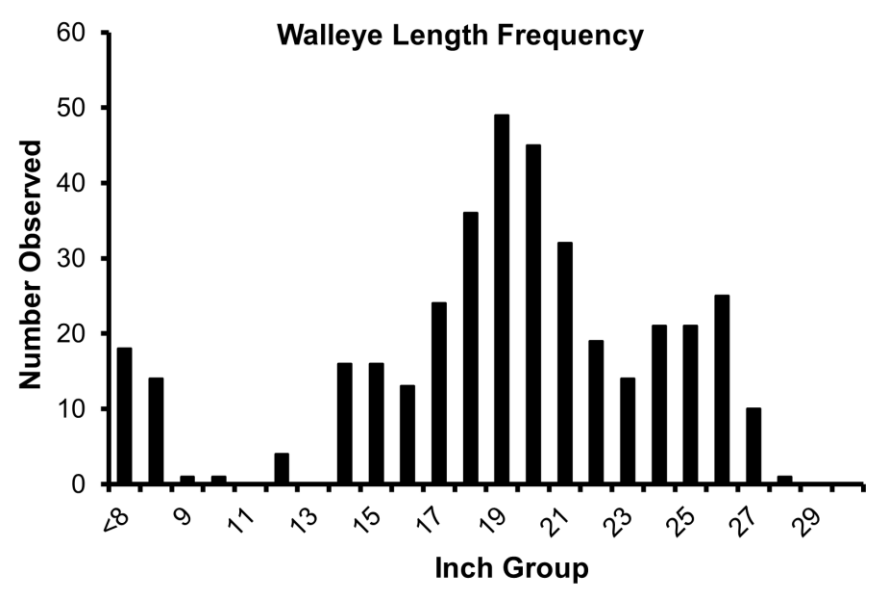


Figure 2. A length frequency plot of the walleye measured on Franklin Lake, Forest County, Wisconsin during the 2025 spring netting survey.

Walleye recruitment is assessed using the number of age-0 walleye captured per mile during the fall electrofishing survey. Franklin Lake has been monitored for walleye recruitment since 1979, and historically had very strong walleye recruitment (Figure 3). Typically, a fishery needs at least 1 strong year class, which we consider to be ≥ 20 age-0 walleye per mile, every 5 years to maintain a healthy population. Between 1978 and 2002, 19 walleye recruitment surveys were conducted, with 12 of them capturing ≥ 20 age-0 walleye per mile, and an average relative abundance of 43.8 age-0 walleye/mile. This is very strong and steady walleye recruitment. However, walleye recruitment has been much different since. Between 2003 and 2024, walleye recruitment surveys were conducted in 14 of the 22 years with only 1 year capturing ≥ 20 age-0 walleye/mile, and an average relative abundance of 9.9 age-0 walleye/mile. The 2019 (19.7/mile) and 2024 (19.4/mile) surveys had year classes just below the goal for walleye recruitment. During the 2025 survey, 27.3 age-0 walleye were caught per mile, indicating a strong year class for the first time since 2008.

We also collect age-1 walleye during these surveys designed for age-0 walleye. Age-1 relative abundance was first noted in 1983 at 38.7 age-1 walleye/mile, and started being tracked annually during the fall walleye recruitment surveys in 1987. It has been assessed in most years since then. This indexes the survival from age-0 to age-1. Generally if age-1 relative abundance is ≥ 3/mile we consider that to be acceptable, ≥ 5/mile to be good, and ≥ 10/mile to be an excellent class of age-1 walleye. We have not documented an "Excellent" age-1 class since 1992, and "good" age-1 recruitment has not been seen since 2010. Between 2003 and 2024, of the 19 surveys conducted, only 4 have had age-1 relative abundance ≥ 3/mile, with the most recent being the product of stocking. No acceptable year class has been seen without stocking since the 2009 year class. Furthermore, 4 of the 6 surveys prior to 2025 observed 0 age-1 walleye, with the other 2 being the product of stocking. Age-1 relative abundance during the walleye recruitment survey was 0.93 age-1 walleye/mile in 2025, another year corresponding to be the product of stocking. Walleye recruitment will continue to be assessed in the future.

Walleye stocking has occurred regularly in the last 20 years since the decline of natural reproduction was observed. Fry were stocked in 2005, 2006, and 2007, and small fingerling walleye were stocked in 2010 and 2012. Since 2014, large fingerling walleye have been stocked during even numbered years at a rate of approximately 10/acre.

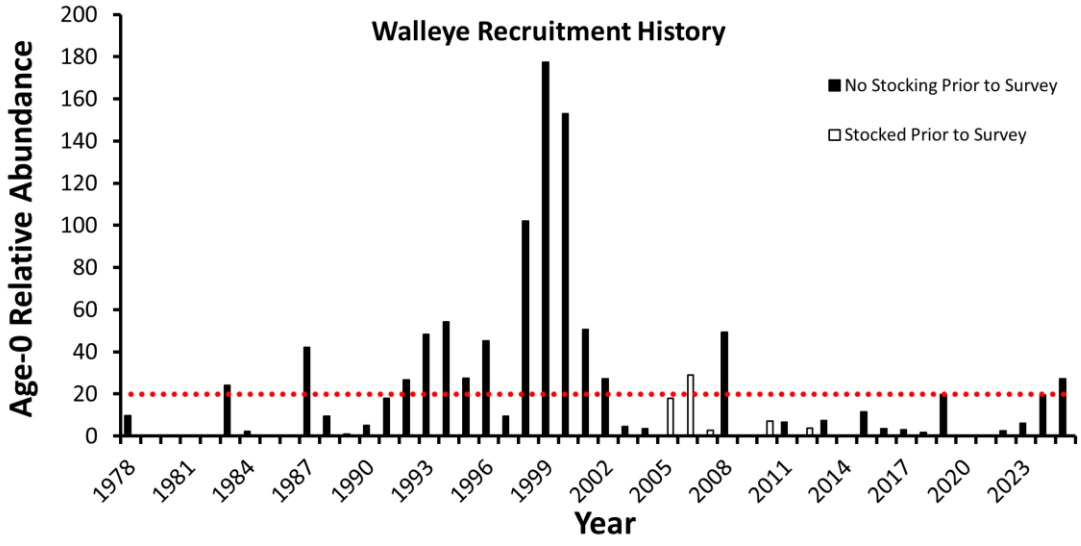


Figure 3. A bar graph showing the number of age-0 walleye caught per mile historically during fall electrofishing surveys on Franklin Lake, Forest County, Wisconsin. Years without bars indicate no survey, as no year recorded 0 age-0 walleye per mile.

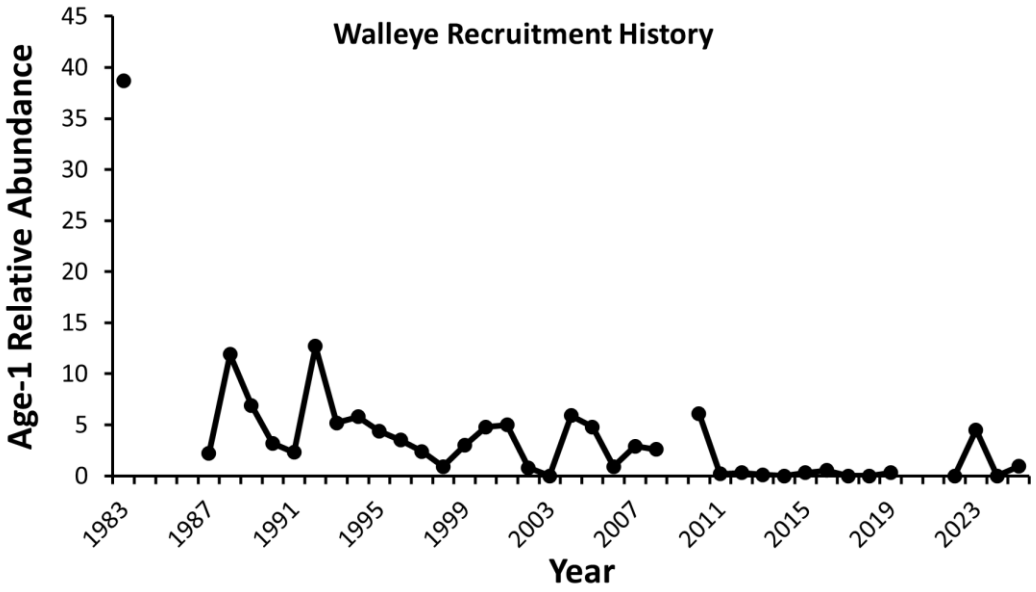


Figure 4. A line graph showing the number of age-1 walleye caught per mile since 1983 during fall electrofishing surveys on Franklin Lake, Forest County, Wisconsin. Age-1 recruitment indexes survival of both stocked and naturally recruited fish. No survey occurred in 2009, 2020, or 2021.

Picture 4. Ethan Burns (Fisheries Technician) holding a walleye captured during a netting survey on Franklin Lake, Forest County, Wisconsin. Photo credit Wisconsin DNR.

NORTHERN PIKE

The Franklin Lake northern pike population was also assessed in the 2025 comprehensive survey, concurrent with the walleye survey. Nets were set both targeting walleye and northern pike. During the marking portion of the survey, 303 adult northern pike were captured and given an identifiable mark. Another sample of 259 adult northern was collected from 4/27 to 4/29/2025, and 72 of those fish had been captured during the initial marking period. From these results, we estimate the population of adult northern pike in Franklin Lake to be 1,121 fish, a density of 1.26 adult northern pike/acre. The last population estimates of northern pike in Franklin Lake occurred in 2002 and 2001, where the abundance was estimated to be 1.22 and 1.4 adults/acre respectively. The northern pike abundance of Franklin Lake appears to be relatively stable. Relative abundance of northern pike was measured at 12.51 fish/net-night during this survey. This relative abundance is above the 95th percentile for the lake class. Relative abundance for nets specifically targeting northern pike was 19.22 fish/net-night, substantially higher than nets set targeting walleye (4.27 fish/net-night).

Picture 5. Levi Feucht (Fisheries Biologist) holding a northern pike captured during a netting survey on Franklin Lake, Forest County, Wisconsin. Photo credit Wisconsin DNR.

All northern pike captured during the spring netting survey were measured to assess the size structure of the population. Excluding fish less than 14 inches, 92.2% of the fish captured were ≥ 21 inches, while 9.7% were ≥ 28 inches. Size structure has shifted since 2014, when 65.4% of the northern pike measured were ≥ 21 inches and 21.2% were ≥ 28 inches. The current size structure of the Franklin Lake northern pike population is above the area average (46.9% ≥ 21 inches and 9.7% ≥ 28 inches). The

largest pike captured in the 2025 spring netting survey measured 44.3 inches. A length frequency of northern pike captured during 2025 can be seen below (Figure 4).

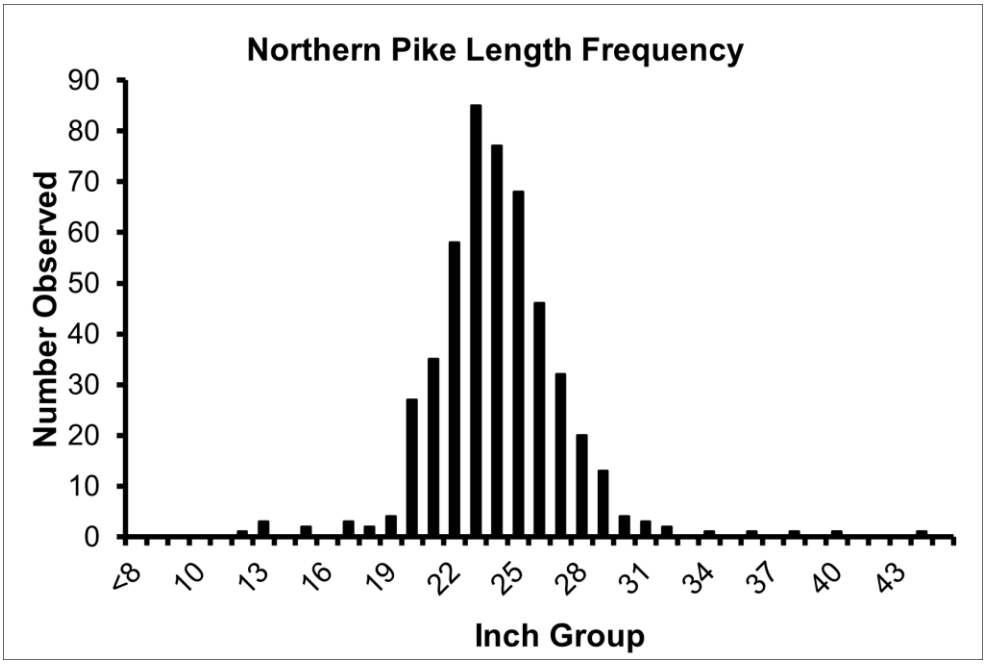


Figure 5. A length frequency plot of the northern pike captured during the spring netting survey on Franklin Lake, Forest County, Wisconsin.

SMALLMOUTH BASS

A smallmouth bass population estimate was conducted on Franklin Lake as a part of the comprehensive survey. Smallmouth bass were captured during the spring fyke net survey, walleye electrofishing survey, and 4 nights of targeted bass electrofishing surveys (5/7, 5/15, 5/20, and 5/21/2025) to estimate the adult population. During these surveys we captured 676 different adult smallmouth bass and marked them with an identifiable fin clip. On the night of 5/27/2025 the entire shoreline of Franklin Lake was electrofished capturing 160 adult smallmouth bass, with 65 fish previously captured during the marking survey. From this data, we estimate there to be 1,663 adult smallmouth bass in Franklin Lake, a density of 1.86 adults/acre. This is an increase from the previous population estimates in 2002 (0.87 adults/acre) and 1997 (1.35 adults/acre). Smallmouth bass density is slightly below the area average (2.04 adults/acre). Smallmouth bass were captured at a rate of 30.0 adults/mile on 5/15/2025, and a rate of 17.6 adults/mile during the recapture survey on 5/27/2025. Relative abundance in 2014 was 16.0 adults/mile, suggesting the population is

continuing to increase. Smallmouth bass relative abundance combined from the 5/15 and 5/27/2025 standardized surveys was 23.79 fish/mile, which is greater than the 95th percentile for the lake class (20.01 fish/mile) indicating very high relative abundance.

Picture 6. Levi Feucht (Fisheries Biologist) holding a smallmouth bass netted during a nighttime electrofishing survey on Franklin Lake, Forest County, Wisconsin. Photo credit Wisconsin DNR.

Every smallmouth bass captured during the spring surveys was measured for size structure analysis. After removing all fish less than 7 inches, we found that 74.7% of the smallmouth bass captured were ≥ 14 inches and 38.2% were ≥ 17 inches. Additionally, 1.5% were ≥ 20 inches. Size structure has increased significantly since 2014, when 29.4% were ≥ 14 inches, 12.5% were ≥ 17 inches, and no fish were ≥ 20 inches, as well as since 2002 when 50.5%, 16.4%, and 0.5% were ≥ 14, 17, and 20 inches, respectively. The Franklin Lake smallmouth bass population has very high size structure for the area, which averages 41.7% ≥ 14 inches, 12.2% ≥ 17 inches, and 0.4% ≥ 20 inches. A length frequency of the smallmouth bass captured during the 2025 survey can be seen below (Figure 5). The largest smallmouth bass captured was 21.0 inches.

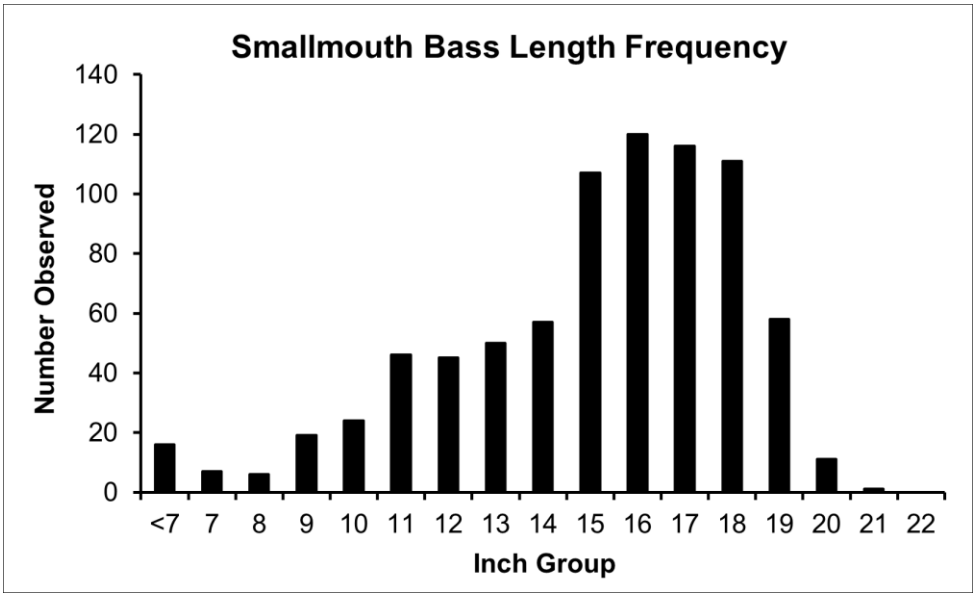


Figure 6. A length frequency plot of the smallmouth bass measured during the 2025 bass survey on Franklin Lake, Forest County, Wisconsin.

Picture 7. Greg Matzke (Senior Fisheries Biologist) holding a smallmouth bass netted during a nighttime electrofishing survey on Franklin Lake, Forest County, Wisconsin. Photo credit Wisconsin DNR.

YELLOW PERCH

Yellow perch were assessed during the 4/24-4/29/2025 netting survey. Yellow perch relative abundance was measured at 1.69 fish/net-night. This is well below the 2014 relative abundance of 8.00 fish/net-night. Yellow perch median relative abundance for this area of the state is 0.81 fish/net-night, making this a moderately abundant population, despite the decreased abundance. Current yellow perch relative abundance is below the median for this lake class (4.80 fish/net-night). Yellow perch are likely of higher abundance than these results indicate, as standard surveys do not always accurately portray yellow perch populations.

A total of 93 yellow perch were measured for size structure analysis. After removing all fish less than 5 inches, 9.8% of the yellow perch were ≥ 8 inches and 1.1% were ≥ 10 inches. Size structure has increased since the 2014 survey when only 5.3% were ≥ 8 inches and no fish were ≥ 10 inches. Yellow perch size structure is below the area average of 15.5% of yellow perch being ≥ 8 inches and 2.8% ≥ 10 inches. A length frequency figure of the yellow perch captured during the 2025 survey can be seen below (Figure 6).

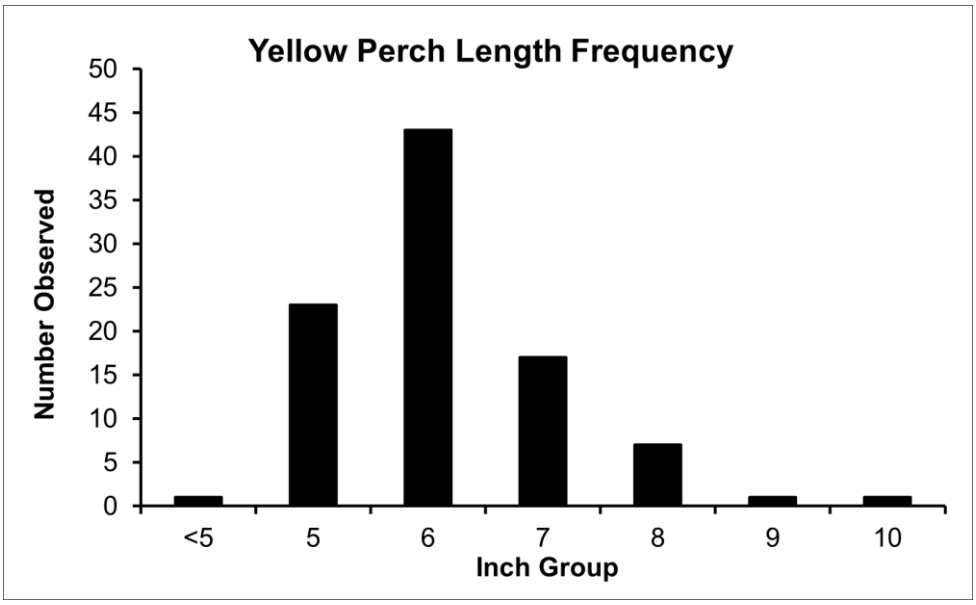


Figure 7. A length frequency plot of the yellow perch measured during the 2025 comprehensive survey on Franklin Lake, Forest County, Wisconsin.

BLUEGILL

Bluegill were assessed during a late spring fyke netting survey targeting summer spawning panfish from 6/16 – 6/18/2025. Bluegill relative abundance was 41.83 fish/net-night and were the most abundant panfish species in 2025. This is considered to be a below average abundance of bluegill, as the area average is 65.57 fish/net-night. There has been a significant increase in bluegill relative abundance since the last bluegill assessment in 1997, when relative abundance was 1.16 fish/net-night.

Every bluegill was measured during the late spring fyke netting survey. Those ≥ 3 inches were used to assess size structure. Of these, 18.5% were ≥ 6 inches and 1.2% were ≥ 8 inches. This is a decrease from the 1997 survey when 70.3% were ≥ 6 inches and 13.5% were ≥ 8 inches. The bluegill population in Franklin Lake has very low size structure, well below the area average of 61.6% ≥ 6 inches and 9.4% ≥ 8 inches. The bluegill length frequency from 2025 can be seen below (Figure 7).

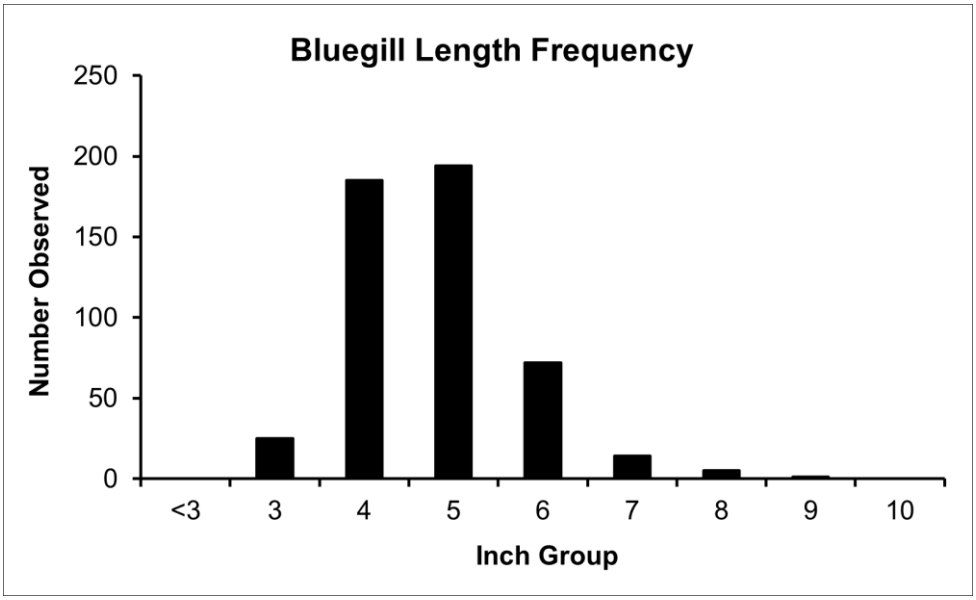


Figure 8. A length frequency plot of the bluegill measured during the 2025 comprehensive survey on Franklin Lake, Forest County, Wisconsin.

ROCK BASS

Rock bass were surveyed during the same netting survey as bluegill. Rock bass relative abundance was 21.33 fish/net-night. Like bluegill, this is a significant increase since 1997 when rock bass relative abundance was 3.03 fish/net-night.

All rock bass caught during the late spring netting survey were measured to assess size structure. Excluding fish less than 4 inches long, 22.3% were ≥ 7 inches and 1.2% were ≥ 9 inches. This is considered to be a moderate to low size structure. Size structure has decreased since 1997, when 43.2% were ≥ 7 inches and 9.5% were ≥ 9 inches. The decrease in size structure is expected with the increase in abundance. A length frequency of rock bass captured during 2025 can be seen below (Figure 8).

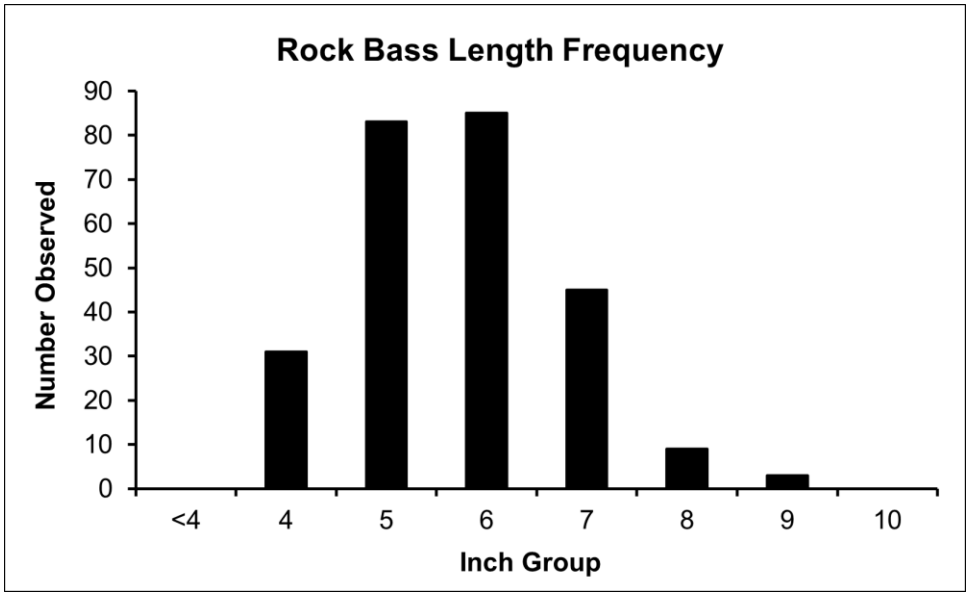


Figure 9. A length frequency plot of the rock bass measured during the 2025 comprehensive survey on Franklin Lake, Forest County, Wisconsin.

WHITE SUCKER

The Franklin Lake white sucker population was assessed during the early spring walleye netting survey. White sucker relative abundance was 6.61 fish/net-night, which is well above the area average of 1.03 fish/net-night. White sucker relative abundance has increased since they were last assessed in 2014 when their relative abundance was 1.25 fish/net-night. White sucker are considered abundant in Franklin Lake.

All white sucker captured from 4/24 – 4/27/2025 and a random subsample from 4/28/2025 were measured for size structure analysis. Of the white sucker measured, 97.4% were ≥ 10 inches, 56.8% were ≥ 16 inches, and 41.0% of the white sucker were ≥ 20 inches (which is considered “trophy” size). Size structure of the Franklin Lake white sucker population is exceptionally high. The largest white sucker measured was 25.3 inches. A length frequency of white sucker measured during 2025 can be seen below (Figure 9).

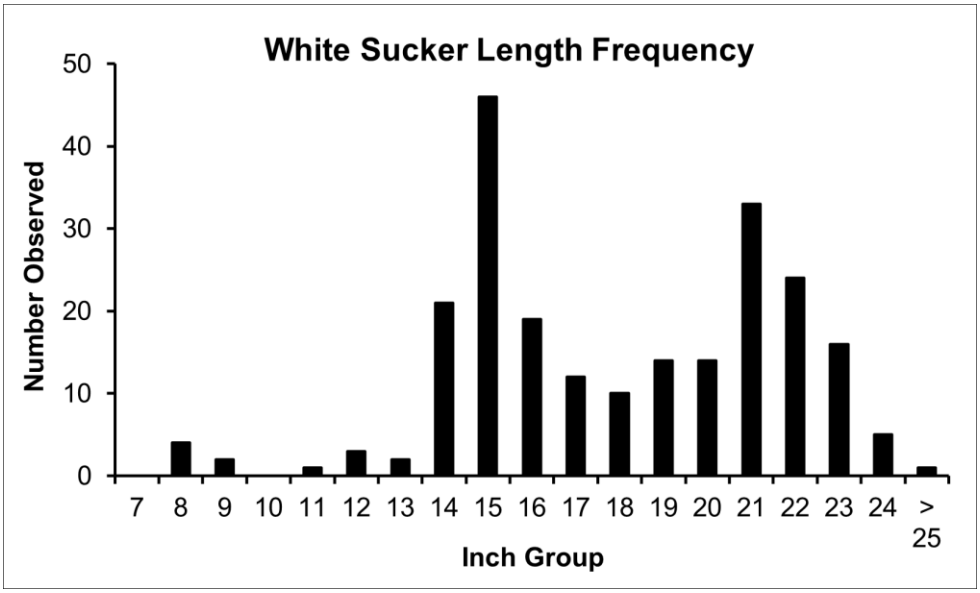


Figure 10. A length frequency plot of the white sucker measured during the 2025 comprehensive survey on Franklin Lake, Forest County, Wisconsin.

LAKE WHITEFISH

Lake whitefish were surveyed through both summer vertical gill netting and fall electrofishing. Lake whitefish captured ranged from 3.8 to 22.7 inches, suggesting that natural reproduction is still occurring in Franklin Lake. The presence of a lake whitefish population is noteworthy as inland lake whitefish populations are declining across their historical range as habitat becomes less suitable. Franklin Lake is one of nine inland lakes/systems reported to have lake whitefish in Wisconsin, although the number of remaining populations may be lower as only 6 lakes/systems were confirmed to still have lake whitefish in the 2011-2014 statewide assessment. Effort targeting lake whitefish was relatively low in the 2025 assessment, and future surveys will be needed to properly evaluate abundance.

OTHER SPECIES

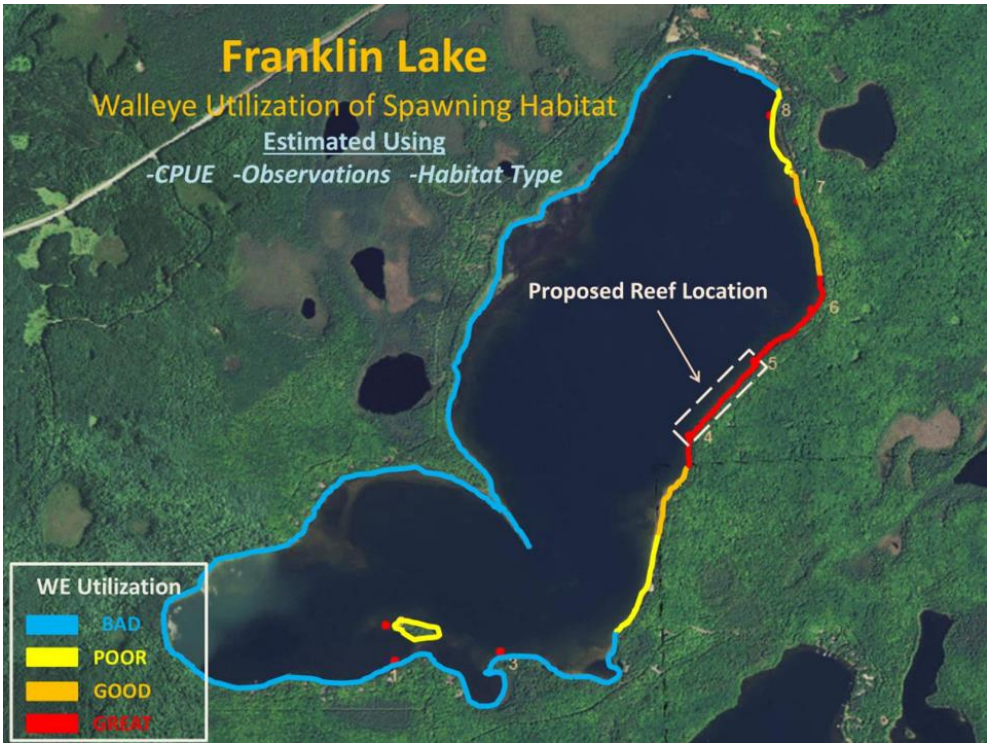
During the 2025 comprehensive survey, 5 other fish species were captured which were not detailed in this summary. None of these species were caught in high abundance. The table below shows the relative abundance (catch/net-night) of these species across the two netting surveys. Species included in the table are largemouth bass (LMB), pumpkinseed (PKS), bluegill x pumpkinseed hybrid (B x P), golden shiner (GSH), and common shiner (CSH). No other species were captured.

Table 2. A table detailing relative abundance of species captured during the 2025 comprehensive survey on Franklin Lake, Forest County, Wisconsin, which were not detailed in this summary.

RELATIVE ABUNDANCE OF OTHER SPECIES (FISH/NET-NIGHT)					
Survey	**LMB**	**PKS**	**B x P**	**GSH**	**CSH**
Spring Netting #1 (4/24—4/29/2025)	0.12	0.14	0	0.02	0.20
Spring Netting #3 (6/16—6/18/2025)	0.75	1.33	0.58	0	0.33

FUTURE HABITAT IMPROVEMENT PROJECT

A habitat improvement project on Franklin Lake has been approved, pending funding. If funding is secured, a walleye spawning reef would be installed along a portion of the US Forest Service campground. The site location is where the overwhelming majority of walleye attempt to spawn, however this area is a vast sand flat. We believe that rock from this area has been removed by spring ice push during variable water levels. By re-establishing a rocky substrate in this location, we hope to increase natural walleye recruitment.



Picture 8. Map of walleye utilization of Franklin Lake shoreline during the walleye spawn, as well as the proposed and approved location for the rock reef installation.

SUMMARY

Franklin Lake is a lightly developed lake within the Chequamegon-Nicolet National Forest with adequate lake access provided through the U.S. Forest Service. This lake provides quality recreational opportunity. This comprehensive survey details all major fish species within the system and should provide an adequate picture to the shape and status of the fishery in its current state.

The Franklin Lake walleye population exhibits significant recruitment issues. Poor age-0 relative abundance for over 20 years, with no strong natural year classes from 2009 to 2024, has created a low-density population of above average size structure. Franklin Lake has a restrictive harvest regulation to promote recruitment and protect juvenile fish until maturity. Even with the restrictive regulation, nearly 79% of the adult walleye population is of a harvestable size. Despite the restrictive regulation and consistent stocking, the Franklin Lake walleye population is still in decline. Future habitat improvement hopes to promote spawning success to create a more desirable walleye population. The current walleye regulation is the most appropriate regulation for this population.

Overall, gamefish in Franklin Lake are of low abundance and high size structure. This may create a desirable population for some anglers. Total gamefish density in Franklin Lake is approximately 3.6 adult gamefish/acre, which is very low, with more than half of the adult gamefish being smallmouth bass. Franklin Lake has a liberal harvest regulation to promote the harvest of smaller smallmouth bass. This regulation promotes quality sized fish while also keeping the population size from becoming overabundant. All gamefish regulations on Franklin Lake are appropriate.

Centrarchid panfish are increasing in abundance and bluegill are likely the dominant panfish species in Franklin Lake. This is a notable change from previous surveys, as centrarchid panfish species (bluegill, pumpkinseed, and rock bass) were nearly absent prior to the 1997 survey. Yellow perch are likely of higher abundance than recorded, as standard surveys do not always accurately portray yellow perch populations. Panfish size structure is low across all species. Current panfish regulations are appropriate.

Franklin Lake is a unique system as it has one of the few remaining native lake whitefish populations in inland Wisconsin. Multiple year classes were observed in 2025 surveys, including the presence of juvenile fish indicating recent spawning

success. This is a population that will continue to be monitored in the future. Further investigation into the lake whitefish population are needed to assess the appropriateness of the current regulations.

Franklin Lake is a great candidate for habitat improvement. Recent introductions of course woody habitat to Franklin Lake may have had an influence in increasing centrarchid panfish populations, as has been observed following habitat improvement projects in other systems. The proposed walleye spawning reef project would provide quality spawning habitat promoting not only walleye spawning, but may have a positive influence on other species' success as well. This habitat improvement project is supported by the Wisconsin DNR, the U.S. Forest Service, and Mole Lake Fisheries. Should funding be secured and conditions be acceptable, this project would be implemented in early 2027.

Franklin Lake is on a 12-year sampling rotation, however it will likely receive attention prior to the next scheduled survey to properly assess changes in the lake should the rock reef be installed.

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